SUMMARY OF ANALYTICAL METHODS

From Technical Considerations for Investigating 1,2,3-Trichloropropane Subsurface Contamination in San Gabriel Valley Area 3, August 2005[1]

Method	Detection Limit (µg/L)	Sample Container	Holding Time	Approximate Cost per Sample
DHS-Approved Analytical Methods for 1,2,3-TCP in Water				
DHS PT-GC/MS[2]	0.005	40-ml vial, HCl to pH <2; cooled to 4°C	14 days	$150
DHS LLE-GC/MS	0.005	1-L amber bottle; cooled to 4°C	14 days before extraction; 24 hours for extract analysis	$225
EPA 504.1	Varies by laboratory; typical detection limits in the past have been 0.02 µg/L	40-ml vial with sodium thiosulfate; cooled to 4°C	14 days before extraction; 24 hours for extract analysis	$85
EPA 551.1	Varies by laboratory; one laboratory reported a 0.008 µg/L detection limit	60-ml vial with ammonium chloride; cooled to 4°C	14 days before extraction; 14 days for extract analysis	NA
Other Analytical Methods for 1,2,3-TCP in Water				
EPA 502.2	0.4 µg/L	40-ml vial with ascorbic acid[3]; HCl to pH <2; cooled to 4°C	14 days	$110 to $275
EPA 524.2[4]	0.03 µg/L	40-ml vial with ascorbic acid[3]; HCl to pH <2; cooled to 4°C	14 days	$225 to $275
EPA 8260	0.005 µg/L	40-ml vial with ascorbic acid[3]; HCl to pH <2; cooled to 4°C	14 days	$500
Analytical Methods for 1,2,3-TCP in Soil				
EPA 8021B	Approximately 10 micrograms per kilogram (µg/kg)	Encore™ sampler, brass or stainless-steel sleeve[5], cooled to 4°C	14 days; otherwise analysis must be completed within 48 hours. Sample should not be frozen below -20°C due to potential problems with seals and the loss of constituents upon sample thawing.	$150
EPA 8260B	Approximately 5 µg/kg[6]	Encore™ sampler, brass or stainless-steel sleeve[5], cooled to 4°C	14 days; otherwise analysis must be completed within 48 hours. Sample should not be frozen below -20°C due to potential problems with seals and the loss of constituents upon sample thawing.	$225 to $350

SUMMARY OF ANALYTICAL METHODS

From Technical Considerations for Investigating 1,2,3-Trichloropropane Subsurface Contamination in San Gabriel Valley Area 3, August 2005[1]

Method	Detection Limit (µg/L)	Sample Container	Holding Time	Approximate Cost per Sample
EPA 8270C	Approximately 330 to 660 µg/kg	Encore™ sampler, brass or stainless-steel sleeve[5], cooled to 4°C	14 days; otherwise analysis must be completed within 48 hours. Sample should not be frozen below -20°C due to potential problems with seals and the loss of constituents upon sample thawing.	$195
Analytical Methods for 1,2,3-TCP in Soil Gas				
EPA 8260B	1 µg/L – vapor	Amber gas-tight glass bulb or SUMMA™ canister	4 hours for amber gas-tight glass bulb; 72 hours for SUMMA™ canister[7]	NA
NIOSH 1003	0.01 mg/sample	Solid sorbent	None published, but analysis should be done as soon as possible to minimize analyte loss	NA
EPA TO-15	0.050 micrograms per cubic meter (µg/m^3)	SUMMA™ canister	30 days	$125

[1] See referenced document for additional information and details.

[2] Used by EPA Region 9 for groundwater monitoring samples in Area 3.

[3] Use of ascorbic acid is recommended in samples collected from some public drinking water systems to remove any chlorine that may be in the water. Ascorbic acid is a very weak acid that is not be suitable for lowering the pH of the sample (HCl is instead used for that purpose).

[4] EPA 524.2 has recently been used in the SIM mode for the analysis of 1,2,3-TCP with a detection limit of 0.002 µg/L.

[5] To minimize analyte loss, EPA recommends collecting a soil sample in an Encore™ sampler, or extruding the sample into an empty sealed vial, cooling to 4 ± 2°C for no more than 48 hours, then freezing to -7°C upon laboratory receipt.

[6] By using SIM, the 8260 detection limits can be reduced by orders of magnitude.

[7] LARWQCB requirement.

NA – Not available